

I CLAIM:

1. A method of controlling a printer to print data on print media, the method comprising the steps of:

5 (a) providing a printer having memory including a plurality of object oriented classes stored therein, with each class configured to control at least one operation of the printer;

(b) associating a virtual input port in the memory with a physical input port of the printer;

10 (c) receiving at the virtual input port at least one printerlet having at least one printer configuration instruction;

(d) invoking each printer configuration instruction;

(e) receiving data at the virtual input port;

15 (f) invoking at least one object oriented class as a function of at least one invoked printer configuration instruction;

(g) processing the data as a function of the at least one invoked object oriented class; and

(h) printing the processed data on print media.

2. The method as set forth in claim 1, wherein each printer configuration instruction is an interpretive command.

3. The method as set forth in claim 1, wherein the plurality of object oriented classes includes at least one of:

a sniffer class having one or more sniffer objects for detecting the type of data received at the virtual input port;

5 a plurality of page description language (PDL) classes, with each PDL class associated with a sniffer object; and

a plurality of layout manager classes, with each layout manager class for converting the received data from a virtual page to a physical page which is printed on the print media.

4. The method as set forth in claim 3, wherein the plurality of layout manager classes implement at least two of the following:

straight through printing;

two-sided printing;

5 two pages of a book on a single page in landscape;

fit to page;

thumbnail;

collate;

merge two or more print jobs onto a single page;

10 N-up, where N is the number of pages printed on a single page;

print separate colors on separate pages; and

translation between software languages.

5. The method as set forth in claim 1, wherein each class includes one or more procedures which operate on the data received at the virtual input port with the one or more printerlets.

6. The method as set forth in claim 2, wherein step (d) includes the steps of:

translating each printer configuration instruction in real time; and

executing each translated printer configuration instruction in real time.

7. The method as set forth in claim 1, further including the steps of: detecting for the presence of the at least one printerlet in an incoming datastream received at the virtual input port;

5 in response to detecting the at least one printerlet in the incoming datastream, invoking a printerlet processing routine which reads, loads and instantiates each printer configuration instruction in the detected printerlet;

creating a print job class that includes a script for processing the data, where the script includes the name of at least one object oriented class which was included in the script as a function of at least one printer configuration instruction; and

processing the data in accordance with the script.

8. A printer comprising:

a controller configured to receive one or more printerlets and data from one or more computers connected thereto, where each printerlet includes one or more printer configuration instructions and the controller invokes each printer configuration instruction;

a memory connected to the controller, the memory storing therein a plurality of object oriented classes each configured to control at least one operation of the printer; and

a print engine connected to the controller to be controlled thereby to print data on print media as a function of at least one object oriented class invoked by the controller from the memory in response to the controller invoking at least one printer configuration instruction.

9. The printer as set forth in claim 8, wherein:

each printer configuration instruction is an interpretive instruction that is translated by the controller;

in response to invoking at least one translated printer configuration instruction, the controller causes a script, which is instantiated in the memory in response to the printer receiving the incoming data, to include a name of the at least one object oriented class; and

the controller operates the print engine in accordance with the script.

5 10. The printer as set forth in claim 8, wherein the controller is connected to the one or more computers via a computer network system which is utilized to convey the one or more printerlets and data to the printer.

11. The printer as set forth in claim 8, wherein each object oriented class includes one or more procedures which operate on the data.

12. A printer connectable to one or more computers, the printer comprising:

control means connected to one or more computers for receiving therefrom one or more printerlets and data;

5 computer storage means connected to the control means and storing therein a plurality of object oriented classes invocable by the control means, each object oriented class configured to control at least one operation of the printer; and

print means connected to the control means, the print means printing data on print media in response to receiving commands from the control means, wherein:

10 the control means is responsive to the one or more printerlets for causing at least one object oriented class to be invoked for processing the data;

the control means processes the data as a function of the invoked object oriented class; and

15 the control means issues commands to the print means as a function of the processing of the data.

13. The printer as set forth in claim 12, wherein:

the control means invokes a port monitor class which monitors for incoming data including printerlets and data;

5 in response to detecting a printerlet in the incoming data, the port monitor class causes the control means to invoke an interpreter for interpreting the printerlet;

the control means instantiates a print job having a script that includes the name of at least one object oriented class that was included in the script as a function of the invocation of the interpreted printerlet; and

the control means processes the data in accordance with the script.

14. The printer as set forth in claim 13, wherein:

as a function of the invocation of the interpreted printerlet, the control means adds to the computer storage means a new object oriented class; and

5 the control means invokes the new object oriented class as a function of the data type of the data.

15. The printer as set forth in claim 12, wherein:
the control means invokes a port monitor class which monitors for
incoming data including printerlets and data;
in response to detecting a printerlet in the incoming data, the port monitor
5 class causes the control means to invoke an interpreter for interpreting the printerlet;
as a function of the invocation of the interpreted printerlet, the control
means adds to the computer storage means a new object oriented class; and
the control means invokes the new object oriented class as a function of
the data type of the data.

16. The printer as set forth in claim 15, wherein:
the control means instantiates a print job having a script that includes the
name of at least one object oriented class that was included in the script as a function of
the invocation of the interpreted printerlet; and
5 the control means processes the data in accordance with the script.

17. A method of controlling a printer, the method comprising the steps
of:
(a) providing a printer having memory including a plurality of object
oriented classes stored therein, with each class configured to control at least one
5 operation of the printer;
(b) associating a virtual input port in the memory with a physical
input port of the printer;
(c) receiving data at the virtual input port;
(d) invoking at least one object oriented class as a function of the type
10 of data;
(e) processing the data as a function of the at least one invoked object
oriented class; and
(f) printing the processed data on print media.

18. The method as set forth in claim 17, further including the steps of:
receiving at the virtual input port a printerlet having at least one printer
configuration instruction;

5 invoking each printer configuration instruction; and
invoking another one of the object oriented classes as a function of at
least one invoked printer configuration instruction.

19. The method as set forth in claim 18, further including the steps of:
detecting for the presence of a printerlet received with the data;
in response to detecting the printerlet, invoking a printerlet processing
routine which reads, loads, and instantiates each printer configuration instruction in the
5 detected printerlet;

creating a print job class that includes a script for processing the data,
where the script includes the name of the other at least one object oriented class which
was included in the script as a function of at least one printer configuration instruction;
and

10 processing the data as in accordance with the script.

20. The method as set forth in claim 17, wherein the plurality of
object oriented classes includes:

a sniffer class having one or more sniffer objects for detecting the type of
data received at the virtual input port;

5 a plurality of page description language (PDL) classes, with each PDL
class associated with a sniffer object; and

a plurality of layout manager classes, with each layout manager class for
converting the received data from a virtual page to a physical page.